Tenley
Wright

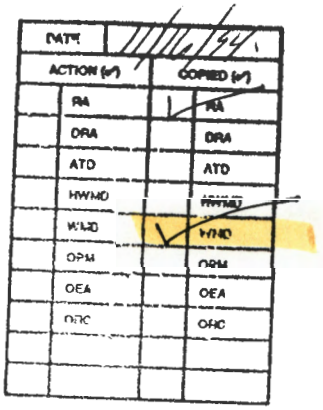
United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, California 95825-1898

IN REPLY
REFER TO:

MP-105C
Env 4.00

NOV 09 1994



Mr. Fred Springer
Director, Office of Hydro-Power
Licensing
Federal Energy Regulatory Commission
825 North Capitol Street N.E.
Washington, DC 920426

Dear Mr. Springer:

Enclosed is a copy of a Framework Agreement (Agreement) between several Federal and State of California agencies in regards to issues surrounding the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay/Delta). The purpose of the Agreement is to establish a comprehensive program for coordination and communication between Federal and State agencies with respect to environmental protection and water supply dependability in the Bay/Delta.

The Agreement will provide for increased coordination and communication between the agencies with respect to the following:

- Substantive and procedural aspects of water quality standard setting;
- Improved coordination of water supply operations with endangered species protection and water quality standard compliance; and
- Development of a long-term solution to fish and wildlife, water supply reliability, flood control, and water quality problems in the Bay/Delta Estuary.

We are collaboratively working with the State to formulate water quality standards for the Bay/Delta by year's end. Additionally and concurrently, we will be announcing actions related to endangered species, and the Bay/Delta long-term solution finding process.

We would like to meet with you to discuss our respective efforts and expertise in the Bay/Delta with the goal of coordinating areas of compatability. We will be contacting you in the near future to set up a meeting to discuss this matter with you.

Please do not hesitate to call me at 916-978-5135, should you have any questions.

Sincerely,

Roger K. Patterson
Regional Director

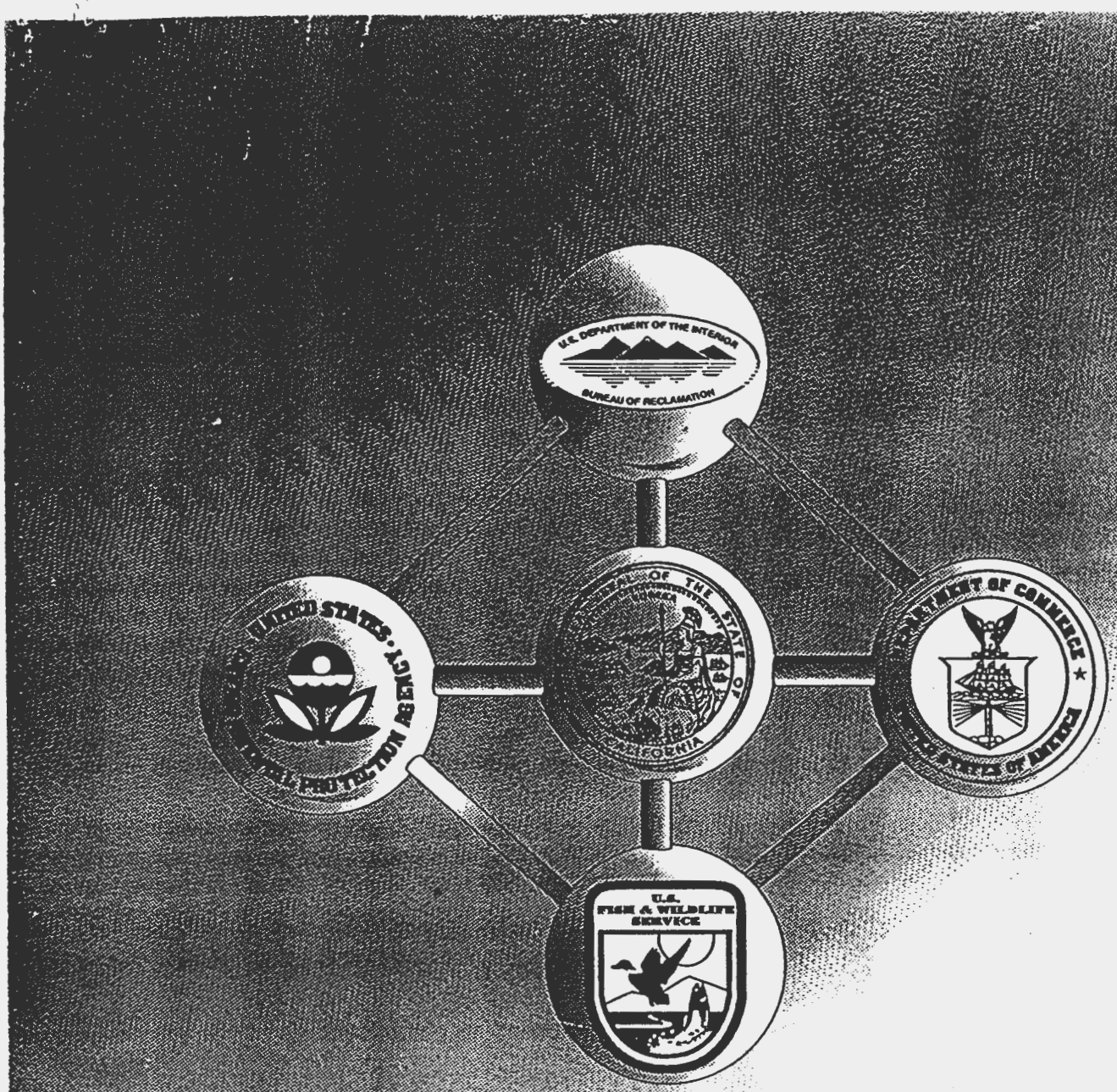
Enclosure

cc: Michael Spear
Regional Director
U.S. Fish and Wildlife Service
911 N.E., 11th Avenue
Portland, Oregon 97232-4181

Felicia Marcus
Regional Administrator
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, California 94105

Hilda Diaz-Soltero
Regional Director
National Marine Fisheries Service
501 W. Ocean Boulevard
Long Beach, California 90802

Wayne White
State Supervisor
U.S Fish and Wildlife Service
2800 Cottage Way, Room E-1803
Sacramento, California 95825



FRAMEWORK AGREEMENT

FRAMEWORK AGREEMENT

BETWEEN THE
GOVERNOR'S WATER POLICY COUNCIL OF THE STATE OF CALIFORNIA
AND THE
FEDERAL ECOSYSTEM DIRECTORATE

This Memorandum of Agreement (Agreement) is entered into between the Governor's Water Policy Council of the State of California (Council) and the Federal Ecosystem Directorate (FED). The purpose of the Agreement is to establish a comprehensive program for coordination and communication between the Council and the FED with respect to environmental protection and water supply dependability in the San Francisco Bay, Sacramento-San Joaquin Delta Estuary and its watershed (Bay-Delta Estuary). In particular, this Agreement is intended to provide for increased coordination and communication with respect to:

- Substantive and procedural aspects of water quality standard setting;
- Improved coordination of water supply operations with endangered species protection and water quality standard compliance; and
- Development of a long-term solution to fish and wildlife, water supply reliability, flood control, and water quality problems in the Bay-Delta Estuary.

RECITALS

1. The Agreement set forth in this document is in acknowledgement of the critical importance of the Bay-Delta Estuary to the natural environment and economy of California, in recognition of the multiple, complex resource management decisions that must be made to stabilize, protect, restore, and enhance the Bay-Delta Estuary, and in appreciation of the close interconnection of Federal and State interests and responsibilities in the Bay-Delta Estuary.

2. In April 1992, Governor Pete Wilson announced a comprehensive water policy for the State of California. That policy was aimed at meeting the needs of all the State's water users for safe, reliable water supplies while mitigating for past water-related harms to fish and wildlife and restoring and maintaining fish and wildlife populations and habitat. Governor Wilson placed special emphasis on solving the problems of the Bay-Delta Estuary, recognizing it as "the centerpiece of California's most intractable water problem."

3. As part of his policy, the Governor announced that he would appoint an Oversight Council to help guide the State's long-term planning and decision-making process.

On December 9, 1992, the Governor created the Bay-Delta Oversight Council (BDOC) and directed it to develop a comprehensive program to protect and enhance the Bay-Delta Estuary by addressing water quality issues, design and operation of water export systems, levee and channel maintenance, and means of protecting the Bay-Delta Estuary and its fish and wildlife resources. He proposed using the California Environmental Quality Act (Cal. Pub. Res. Code § 21000 et seq.) and the National Environmental Policy Act NEPA (42 U.S.C. § 4321 et seq.) as the planning framework for the decision-making process.

4. Also on December 9, 1992, Governor Wilson created the California Water Policy Council consisting of representatives of eight State departments and agencies with responsibilities for implementing State water policy. Governor Wilson charged the Council with sharing information and coordinating activities related to the State's long-term water policy.

5. The Governor's water policy also directed the State Water Resources Control Board (SWRCB) to work closely with the U.S. Environmental Protection Agency (EPA) to develop interim water quality standards for the Bay-Delta Estuary. The SWRCB released a draft interim water right decision in December 1992, but subsequently withdrew it. On March 25, 1994, the SWRCB announced plans to hold additional workshops, and to prepare a draft water quality control plan for release in December 1994.

6. On September 10, 1993, the U.S. Bureau of Reclamation (USBR), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS) and EPA signed an Agreement for Coordination creating the Federal Ecosystem Directorate with the goal of coordinating Federal resource protection and management decisions in the Bay-Delta Estuary and its watershed. Federal responsibilities affecting the Bay-Delta Estuary include listing species as threatened or endangered and conducting consultations under the Federal Endangered Species Act, implementing the Central Valley Project Improvement Act (CVPIA) (Public Law 102-575, Title XXXIV), operating the Central Valley Project, reviewing and, where necessary, promulgating water quality standards under the Clean Water Act (33 U.S.C. § 1251 et seq.), and reviewing water development proposals under the Fish and Wildlife Coordination Act (16 U.S.C. § 661 et seq.), NEPA, Section 404 of the Clean Water Act (33 U.S.C. § 1344), and the Rivers and Harbors Act (33 U.S.C. § 401 et seq.). The Agreement for Coordination also states the Federal agencies' commitment "to work closely with all involved agencies of the State of California and the Federal government so that, to the greatest extent possible, our implementation of Federal law in the Bay-Delta Estuary complements the State's role in allocating water resources and the State's continuing efforts to preserve, protect, and enhance the natural resources of the estuary."

7. On December 15, 1993, the FED announced a series of coordinated actions and proposals to protect the fish and wildlife resources of the Bay-Delta Estuary. These included EPA's proposed water quality standards under the Clean Water Act , USFWS and NMFS actions to protect winter-run salmon, delta smelt and Sacramento splittail under the Endangered Species Act (ESA) (16 U.S.C. § 1531 et seq.), and USFWS and USBR proposals under the CVPIA.

8. Additional water management and resource protection and management actions by State and Federal agencies with responsibility in the Bay-Delta Estuary will be required over the next several years. Close coordination between affected State and Federal agencies is desirable to achieve regulatory consistency and certainty and provide environmental protection in a manner which minimizes impacts on the State's economy and water resources.

9. There are three areas in which Federal-State coordination and cooperation with respect to the Bay-Delta Estuary are particularly important:

a. **Water Quality Standards Formulation.** Under the Federal Clean Water Act and the State of California's Porter-Cologne Act (Cal. Water Code § 13000 et seq.), the SWRCB and the EPA have complementary and closely related roles with respect to formulation of water quality standards for the Bay-Delta Estuary. Therefore, coordination between EPA and SWRCB is vital if adequate Bay-Delta protections are to be achieved and maintained.

b. **Coordination of Federal and State Project Operations with Regulatory Requirements.** There are numerous hydrological, contractual, and operational connections between the Federal Central Valley Project (CVP) and the State Water Project (SWP). These include the Coordinated Operation Agreement, approved by Congress in 1986 (Public Law 99-546); joint obligations to meet State water quality standards, State water rights permits, and Federal and State endangered species requirements; and joint ownership and operation of San Luis Reservoir and San Luis Canal (the Joint-Use Facilities). The projects face a shared challenge in reconciling operational requirements with current and future statutory and regulatory requirements, particularly those relating to endangered species and water quality. Close coordination is necessary to identify operational issues related to statutory and regulatory compliance and to provide a forum for addressing problems and issues promptly as they arise.

In recognition of the complexity of fishery, habitat, water quality, and hydrodynamic issues confronting resource managers in the Bay-Delta Estuary, State and Federal agencies have participated for several years in the scientific study effort known as the Interagency Ecological Program (IEP). The IEP serves as an example of State-Federal cooperation in the Bay-Delta Estuary. The IEP data base and its programs provide a valuable source of scientific information as efforts are made to coordinate operational requirements with regulatory compliance.

c. **Long-Term Bay-Delta Solution.** State and Federal interests and responsibilities in the Bay-Delta Estuary are inextricably intertwined in the areas of fish and wildlife protection and enhancement, water quality protection, flood control, and water supply project operation. There is a shared State-Federal interest in pursuing long-term solutions that adequately address the multiple environmental, economic, and water supply interests in the Bay-Delta ecosystem. Federal and State agencies with responsibilities in the Bay-Delta Estuary must participate. Neither the Federal nor the State government, acting alone, can accomplish this vital task.

AGREEMENT

The Council and the FED agree as follows:

1. We commit to promoting maximum coordination, communication, and cooperation among the State and Federal agencies with interests and responsibilities in the Bay-Delta Estuary within the limits of existing law.

2. We commit to meeting the requirements of State and Federal law in a manner that considers how the overall costs in water and dollars for achieving environmental protection can be minimized.

3. We agree that a major goal of all State and Federal regulatory processes affecting the Bay-Delta Estuary should be to provide meaningful regulatory stability for beneficial uses of the Bay-Delta Estuary's resources. We believe that the best means to this goal is to develop a single, cohesive program consisting of water quality standards and other appropriate actions that meet all requirements of State and Federal law and which will remain in effect, absent unforeseen circumstances, for a period of years.

4. We agree that a primary component of providing regulatory stability is to integrate current and future implementation of the Federal and State Endangered Species Acts into a coordinated approach to resources management in the Bay-Delta Estuary. This can best be accomplished by taking a comprehensive ecosystem approach to the problems of the Bay-Delta Estuary.

5. We agree that it is essential for the State and Federal agencies with regulatory and resources management responsibilities in the Bay-Delta Estuary to reach consensus, consistent with applicable procedural limitations, on the appropriate level of protection to be achieved for the Bay-Delta Estuary.

6. We agree to quarterly joint meetings between the membership of the Council and the FED to discuss resources management issues of mutual concern in the Bay-Delta Estuary, and to evaluate the progress being made in the areas of water quality protection, restoration of ecosystems, operations coordination, and development of a long-term Bay-Delta Estuary solution.

7. We agree that the Interagency Ecological Program will be used as one of the sources of technical support for State-Federal cooperative efforts in the Bay-Delta Estuary.

8. We endorse and concur with the points of agreement attached to this Framework Agreement and incorporated in it by this reference as Exhibits A, B, and C, dealing respectively with:

- State and Federal Processes for Setting Water Quality Standards for the Bay-Delta Estuary

- Coordinating CVP/SWP Operations With Endangered Species, Water Quality, and CVPIA Requirements

- A Joint State-Federal Process to Develop Long-term Solutions for the Problems Affecting Public Values in the Bay-Delta Estuary.

9. We recognize that as public agencies we each have specific statutory and regulatory authority and responsibilities, and that our actions must be consistent with applicable procedural and substantive requirements. This Agreement is intended to be in furtherance of the agencies' discharge of their respective authority and responsibilities, and its provisions are to be interpreted and implemented accordingly. Nothing in this Agreement is intended to or shall have the effect of constraining or limiting the agencies in carrying out their statutory responsibilities. Nothing in this Agreement constitutes an admission by any party as to the proper interpretation of any provision of law, including, without limitation, Clean Water Act Sections 101(g) and 303, nor is anything in this Agreement intended to, nor shall it have the effect, of waiving or limiting any party's rights and remedies under any applicable law.

UNITED STATES OF AMERICA

Elizabeth Ann Rieke — June 30, 1994

Elizabeth Ann Rieke
Assistant Secretary for Water and Science
Department of the Interior — Dated

Roger K. Patterson — 7/19/94

Roger K. Patterson
Regional Director
U.S. Bureau ofReclamation — Dated

George T. Frampton, Jr. — July 7, 1994

George T. Frampton, Jr.
Assistant Secretary for Fish and Wildlife
and Parks, Department of the Interior — Dated

Michael J. Spear — 7/28/94

Michael J. Spear
Regional Director
U.S. Fish and Wildlife Service — Dated

Bob Perciasepe — 7-8-94

Robert Perciasepe
Assistant Administrator for Water
Environmental Protection Agency — Dated

Felicia Marcus — 8/2/94

Felicia Marcus
Regional Administrator
Environmental Protection Agency — Dated

Douglas K. Hall — July 15, 1994

Douglas Hall
Assistant Secretary for Oceans
and Atmosphere, Department of Commerce — Dated

Rodney R. McInnis — 7-29-94

Rodney R. McInnis
Acting Regional Director
National Marine Fisheries Service — Dated

STATE OF CALIFORNIA

Douglas P. Wheeler
Secretary, California Resources Agency
Chair, California Water Policy Council

7-1-94
Dated

Boyd Gibbons, Director
California Department of Fish and Game

6/30/94
Dated

David N. Kennedy, Director
California Department of Water Resources

6-29-94
Dated

John J. Amodio, Executive Officer
California Bay-Delta Oversight Council

6-30-94
Dated

James M. Strock
Secretary for Environmental Protection
California Environmental Protection Agency

July 5, 1994
Dated

John P. Caffrey, Chair
State Water Resources Control Board

6-30-94
Dated

EXHIBIT A

POINTS OF AGREEMENT
ON
STATE AND FEDERAL PROCESSES FOR SETTING WATER QUALITY STANDARDS FOR THE BAY-DELTA ESTUARY

1. EPA has proposed and received public comments on draft water quality standards for the Bay-Delta Estuary pursuant to Section 303(c)(3) and 303(c)(4) of the Clean Water Act (33 U.S.C. § 1313(c)(3), (4)). EPA will take final action on the proposed standards by December 15, 1994. These standards are intended to supersede and supplement 1991 SWRCB standards disapproved by EPA relating to estuarine habitat and other fish and wildlife uses of the Bay-Delta Estuary. Upon its approval of State-submitted standards meeting the requirements of the Clean Water Act, EPA will initiate necessary rulemaking action, consistent with the Clean Water Act, to withdraw the Federal standards. Prior to any action on State-submitted standards, EPA will consult with USFWS and NMFS as required by Section 7 of the Federal Endangered Species Act (16 U.S.C. § 1536).

2. Commencing with workshops in April 1994, SWRCB will update and revise its 1991 Water Quality Control Plan for the Bay-Delta Estuary, including revision of the State standards to meet Federal Clean Water Act requirements, and will release a new draft Plan by December 1994. The workshops will solicit comments and recommendations from interested parties on the scope of the review, the level of protection that should be provided to fish and wildlife beneficial uses, the alternatives available to achieve that level of protection, and related issues.

3. The results of this process will be used to prepare a draft water quality control plan and an evaluation of the environmental and economic effects of the draft plan and its alternatives pursuant to all applicable provisions of the California Water Code, the Federal Clean Water Act, and the California Environmental Quality Act (CEQA). A hearing will be held approximately 60 days after the release of the draft plan to solicit comments on the draft plan. The SWRCB will then consider adoption of the draft plan at a subsequent public meeting. After adoption of the plan and its approval by the California Office of Administrative Law (OAL), the new or revised water quality standards contained in the plan that are subject to Federal authority will be submitted to EPA for its review and approval.

4. The SWRCB will initiate a water right proceeding for the purpose of allocating responsibility to comply with water quality standards meeting the requirements of the Clean Water Act among the water right holders in the Bay-Delta watershed and to establish terms and conditions in appropriate water right permits. A CEQA document (probably an EIR) will be prepared before adoption of a water right decision.

5. The SWRCB will seek agreement with the California Department of Water Resources and the U.S. Department of the Interior to operate the SWP and CVP to make an equitable contribution to meeting the standards, starting in calendar year 1995, while the

SWRCB is working on a water rights decision to equitably allocate responsibility among water right holders in the Bay-Delta watershed.[1/]

6. The time schedule for these State Board activities is provided below.

* March 1994 — Distribute workshop notice initiating review of the water quality control plan

* April-July 1994 — Conduct workshops to receive input on the 1994 following subjects, and possibly others:

  April
  - EPA/Federal Ecosystem Directorate proposed standards
  - Level of protection necessary for the Bay-Delta Estuary

  May
  - ESA issues
  - Western Delta industrial diversions
  - Other Delta diversions
  - Striped bass

  June
  - Exotic species
  - Fishery declines from other causes
  - Operations by CVP/SWP for ESA and other species of concern
  - Effects of projects other than SWP/CVP

  July
  - Potential methods of economic analysis
  - Recommendations for alternative standards
  - Interim implementation of standards by SWP/CVP during 1995 and until water rights decision is implemented

* July-November 1994 — Analyze data and write draft Water Quality Control Plan

* December 1994 — - Release draft Water Quality Control Plan and Notice of Hearing to Consider Plan
  - Negotiate agreements for compliance with draft standards during 1995 and until water rights decision is implemented (see footnote #1)

* January 1995 — Commence SWP/CVP operations under interim compliance standards[2/]

---

1. It may be possible for the standards to be phased, with the initial phase implemented by the projects during the water rights hearings. Compliance with Endangered Species Act requirements affecting the Bay-Delta may result in actions which contribute to or result in meeting the standards' initial phase.

2. Because of procedural complexities and numbers of diversions affected, the water rights process could take up to two years to complete.

* February 1995 Conduct Water Quality Control Plan hearing
* March 1995 Adopt Water Quality Control Plan
* June 1995 Commence water rights process

EXHIBIT B

POINTS OF AGREEMENT
ON
COORDINATING CVP/SWP OPERATIONS WITH ENDANGERED SPECIES, WATER QUALITY, AND CVPIA REQUIREMENTS

1. Listing of the winter-run Chinook salmon and delta smelt under the State and Federal Endangered Species Acts has resulted in biological opinions by NMFS, USFWS and the California Department of Fish and Game (DFG) containing constraints on CVP and SWP operations. Additional listing of other species, such as the Sacramento splittail, could require additional constraints on project operations.

2. The 1993 winter-run Chinook salmon biological opinion issued by NMFS and adopted by DFG includes a reasonable and prudent alternative (RPA) and incidental take statement that set requirements for Sacramento River flows and temperature, Delta Cross-Channel gate operation, Delta channel flows, SWP-CVP coordination and cooperation, take limits, carry-over storage requirements at Shasta Reservoir, operation restrictions at Red Bluff Diversion Dam, monitoring and studies, and creation of a monitoring work group and an operations and management work group to coordinate implementation of the RPA.

3. The 1994 delta smelt biological opinion issued by USFWS and under consideration for adoption by DFG includes an RPA and incidental take statement that set requirements for transport and habitat flows, San Joaquin River transport flows, late spawning protection, Suisun Marsh salinity control structure operation, SWP-CVP coordination and cooperation, take limits, monitoring and studies, and provide for creation of a working group and a management group to coordinate implementation of the RPA.

4. A high level of coordination by resource managers, water operators, and biologists is needed to provide comprehensive and effective implementation of the complex requirements for resource protection affecting Bay-Delta resources and the CVP and SWP operations.

5. A CVP/SWP Operations-Endangered Species Coordination Group ("Coordination Group") shall be established consisting of representatives of USFWS, USBR, NMFS, EPA, DFG, DWR, and staff of the SWRCB. The Coordination Group will exchange information and facilitate the coordination of water project operations with requirements of the RPAs under the winter-run salmon and the delta smelt biological opinions, the State and Federal water quality standards, and the CVPIA.

6. Issues that may be presented within the Coordination Group include:

   -- Review of project operations;

   -- Review of operating parameters in biological opinions;

-- Review of fish distribution and fish population levels;

-- Review of status of endangered species take;

-- Review of fish identification procedures;

-- Discussion of strategies for implementation of fishery protections to resolve conflicts between operations, water quality requirements, and fishery needs in the Bay-Delta Estuary and its watershed;

-- Coordination of the winter-run salmon monitoring and operations and management work groups with the delta smelt management and work groups and with the Interagency Ecological Program;

-- Discussion of strategies for implementation of Bay-Delta Estuary standards;

-- Review of and comment on the annual CVPIA water allocation and on other CVPIA activities related to the Bay-Delta Estuary such as the Anadromous Fish Restoration Program; and

-- Cooperation with the Interagency Ecological Program as well as others to determine factors affecting Delta habitat and health of fisheries, and to identify appropriate corrective measures for the CVP and SWP.

7. The Coordination Group shall meet as necessary to accomplish the purposes of this Agreement.

8. The Coordination Group shall periodically provide briefings on its reviews, recommendations, and activities to the Governor's Water Policy Council and the FED. The Coordination Group shall also provide periodic briefings to other interested parties.

EXHIBIT C

POINTS OF AGREEMENT
ON
DEVELOPMENT OF JOINT STATE-FEDERAL PROCESS TO DEVELOP LONG-TERM SOLUTIONS FOR THE PROBLEMS AFFECTING PUBLIC VALUES IN THE BAY-DELTA ESTUARY

To secure California's water future, the Council and the FED commit to work together to equitably reconcile the economic and environmental values that are dependent on the Bay-Delta Estuary consistent with achieving and maintaining statutory objectives.

The Council and the FED are committed to the principles detailed herein. Taken together, they provide a foundation for a joint process to develop a long-term solution for the problems affecting public values in the Bay-Delta Estuary. The process will be assisted by citizen-advisors gathered from California's agricultural, environmental, urban and other affected interests. The process will be administered through cooperative and coordinated activities of responsible State and Federal agencies, will incorporate full and coordinated compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), and will ensure maximum opportunities for public involvement.

The Council and the FED jointly commit to the following:

1. Alternative solutions will be evaluated to address the underlying causes of problems affecting the Bay-Delta Estuary's public values. These values include:

A. Water quality

B. Guarantees for protection of the Bay-Delta Estuary and its fish and wildlife resources

C. Effective planning and operation of water export systems

D. Maintenance of Delta levees and channels

2. The Public will have a central role. A committee of citizen-advisors, representing California's agricultural, environmental, urban and other affected interests will be created to advise the responsible agencies. This committee will meet the requirements of applicable State and Federal laws. It will include existing members of the State's Bay-Delta Oversight Council as appropriate, with additional appointments as needed to ensure balanced representation. Activities of the citizen-advisors include:

A. Recommend objectives to be met, including both the problems to be addressed and a specific set of objectives.

B. Recommend neutral evaluation criteria to measure the effectiveness of alternative solutions consistent with statutory and regulatory authorities.

C. Recommend specific solution alternatives to be evaluated in a formal CEQA/NEPA process carried out by one or more agencies.

D. As part of the CEQA/NEPA environmental documentation process, recommend the best solution alternative for implementation by the appropriate agencies.

3. The State and Federal agencies will coordinate the joint comparative evaluation within the CEQA/NEPA framework. To assure thoroughness, objectivity, and credibility, the comparative evaluation of selected solution alternatives will be conducted within the CEQA/NEPA framework. This will ensure that all reasonable alternatives will be fully and fairly considered, and that formulation of the solution alternatives and the detailed study of them will occur in an open forum.

4. The State and Federal Agencies agree to coordinate and cooperate in the joint management of the solution-finding process. The Agencies also commit to the provision of information to the citizen advisory committee. The Bay-Delta solution-finding process will also utilize the ongoing Interagency Ecological Program as an additional source of appropriate technical support.

5. The Bay-Delta solution-finding process will be linked to the Central Valley Project Improvement Act and other ongoing processes. The CVPIA is major legislation influencing the management of the CVP, the single largest source of developed water in California. Management of the CVP is linked to operation of the State Water Project through the Coordinated Operation Agreement, through operation of Joint Use Facilities, and through joint obligations to meet water quality standards and endangered species requirements. There is a long history of joint planning and cooperation between the State and Federal governments regarding operations in the Delta. Where appropriate, implementation of the CVPIA and the Bay-Delta Estuary solution-finding processes will be closely coordinated to support and complement one another.

Finally, similar coordination will be developed between the Bay-Delta solution-finding process and other existing State and Federal programs focused on the Bay-Delta Estuary.

6. Implementation. The State and Federal agencies commit to develop as soon as practicable such details as are necessary to commence joint management of the long-term solution-finding process. In the interim, the FED agrees to cooperate, as appropriate, with the State's current long-term solution finding process.

Admin Rec

From Bay Institute

11/10/94

MAJOR DIFFERENCES BETWEEN CUWA/AG, CLUBFED AND ENVIRONMENTALIST PROPOSALS

SAN JOAQUIN RIVER FLOWS

CUWA/Ag	ClubFed	Enviro
2000-5000 cfs flow (by water year type) at Vernalis April 15-May 15	2700-10,000 cfs flow (sliding scale) at Vernalis April 15-May 15	4000-10,000 cfs flow (by water year type) at Vernalis April 1-May 31
Assumes 80% fall run outmigration April 15-May 15. Assumes ClubFed export limits (2000-6000 cfs) in place, not CUWA/Ag export/inflow ratio (under which 6000 cfs export could be exceeded 50%+ of years)	Assumes approx. 2/3 fall run outmigration April 15-May 15 in drier years, and less in wetter years. Balances shorter time period (one-third of SJ fall run outmigration) with higher flow reqs.	Provides protection for two-thirds of SJ fall run outmigration period.

EXPORT LIMITS DURING SAN JOAQUIN RIVER FLOW ENHANCEMENT

CUWA/Ag	ClubFed	Enviro
100 % SJR flow at Vernalis April 15-May 15	1500 cfs April 15-May 15	1500 cfs April 1-May 31
High export levels when Old River barrier is in place affect Central Delta hydrodynamics; Delta smelt and winter run drawn to Central, South Delta	During period Old River barrier is in place, absolute export limits prevent increased in-Delta and entrainment losses	During period Old River barrier is in place, absolute export limits prevent increased in-Delta and entrainment losses

SAN JOAQUIN RIVER SALMON SMOLT SURVIVAL ESTIMATES

CUWA/Ag	ClubFed	Enviro
CUWA/Ag estimates of average survival index: 65-93 historical: .138 CUWA/Ag: .259 EPA: .373	FWS estimates of average survival index: 65-89 historical: .17 CUWA/Ag: .17 EPA: .26	
Consultant's own estimates show that CUWA/Ag measures are not equivalent to ClubFed; also, overestimates percentage of fall run outmigration April 15-May 15 and underestimates exports	CUWA/Ag measures are not equivalent to ClubFed, and not improvement over historical conditions	

DELTA CROSS-CHANNEL GATE OPERATION

CUWA/Ag	ClubFed	Enviro
Closed 30 days: Nov. 1-Jan. 31 All: Feb. 1-May 20	Closed 45 days: Nov. 1-Jan. 31 All: Feb. 1-June 30	Closed All: Nov. 1-June 30
Weak protection for spring and winter runs; no protection for Sacramento River fall run after May 20 (significant portion of Sacramento fall run outmigration may occur in June); not equivalent to ClubFed proposal	Limited protection for spring and winter runs; full protection for Sacramento River fall run	Full protection for spring, fall and winter runs

X2 CONFLUENCE REQUIREMENT

CUWA/Ag	ClubFed	Enviro
Feb (DI<1.5 MAF): 28 days (and 0 days at Chipps) Apr (dry/crit yrs): 30 days May-June (dry/crit yrs): 28 days (7000 cfs)	150 days	150 days
Exposes estuarine species to unsuitable river channel habitat and influence of pumps; fails to provide Feb req at Chipps in 1/3 of all years; not equivalent to ClubFed proposal.	Greater protection for estuarine species from loss of upstream habitat and exposure to pumps; could be modified to allow relaxation in "outlier" critical years (i.e., 76-77 conditions)	Greater protection for estuarine species from loss of upstream habitat and exposure to pumps; could be modified to allow relaxation in "outlier" critical years (i.e., 76-77 conditions)

DELTA EXPORT CONSTRAINTS

CUWA/Ag	ClubFed	Enviro
Export/inflow ratio (by period): Mar-Jun: 30-35% Jul: 35-55% Aug-Sept: 55-65% Oct-Feb: 65%	QWEST: Feb: 0 Mar. 1-Apr. 15: +2000 Apr. 15-30: 0 Nov-Jan: -2000 Export limits (by water year type): Apr. 1-15: 2000-6000 cfs Apr. 15-May 15: 1500 cfs May 15-31: 2000-6000 cfs	Export function (by month): export/inflow ratio as adjusted by antecedent conditions (i.e., X2 location, inflow averaging period, San Joaquin flow) except 1500 cfs Apr-May
Simple % formula could allow extreme swings in export levels, with adverse impacts from rapidly increased export/"reverse flow" conditions; 35-65% export levels offer little improvement over historical conditions that resulted in population declines, and potential exceedance in some months; particularly, during the Nov-Feb period could allow for higher exports and "reverse flows" than experienced in the past (or allowed under NMFS winter run protections), causing increased take of winter and spring run and other species. Not equivalent to either NMFS QWEST restriction or enviro export function.	Provides direct constraints only during 2/3 of SJR fall run outmigration; QWEST provides indirect export constraint to protect winter run, other species by regulating "reverse flow" conditions for 50% of year.	Prevents extreme swings in export levels and renders export operations more sensitive to biological needs by adjusting % of inflow according to indicators of habitat availability and recent hydrological conditions. Baseline ratios to be determined.

From Bay Institute
11/10/94

MAJOR DIFFERENCES BETWEEN CUWA/AG, CLUBFED AND ENVIRONMENTALIST PROPOSALS

SAN JOAQUIN RIVER FLOWS

CUWA/Ag	ClubFed	Enviro
2000-5000 cfs flow (by water year type) at Vernalis April 15-May 15	2700-10,000 cfs flow (sliding scale) at Vernalis April 15-May 15	4000-10,000 cfs flow (by water year type) at Vernalis April 1-May 31
Assumes 80% fall run outmigration April 15-May 15. Assumes ClubFed export limits (2000-6000 cfs) in place, not CUWA/Ag export/inflow ratio (under which 6000 cfs export could be exceeded 50%+ of years)	Assumes approx. 2/3 fall run outmigration April 15-May 15 in drier years, and less in wetter years. Balances shorter time period (one-third of SJ fall run outmigration) with higher flow reqs.	Provides protection for two-thirds of SJ fall run outmigration period.

EXPORT LIMITS DURING SAN JOAQUIN RIVER FLOW ENHANCEMENT

CUWA/Ag	ClubFed	Enviro
100 % SJR flow at Vernalis April 15-May 15	1500 cfs April 15-May 15	1500 cfs April 1-May 31
High export levels when Old River barrier is in place affect Central Delta hydrodynamics; Delta smelt and winter run drawn to Central, South Delta	During period Old River barrier is in place, absolute export limits prevent increased in-Delta and entrainment losses	During period Old River barrier is in place, absolute export limits prevent increased in-Delta and entrainment losses

SAN JOAQUIN RIVER SALMON SMOLT SURVIVAL ESTIMATES

CUWA/Ag	ClubFed	Enviro
CUWA/Ag estimates of average survival index: 65-93 historical: .138 CUWA/Ag: .259 EPA: .373	FWS estimates of average survival index: 65-89 historical: .17 CUWA/Ag: .17 EPA: .26	
Consultant's own estimates show that CUWA/Ag measures are not equivalent to ClubFed; also, overestimates percentage of fall run outmigration April 15-May 15 and underestimates exports	CUWA/Ag measures are not equivalent to ClubFed, and not improvement over historical conditions	

DELTA CROSS-CHANNEL GATE OPERATION

CUWA/Ag	ClubFed	Enviro
Closed 30 days: Nov. 1-Jan. 31 All: Feb. 1-May 20	Closed 45 days: Nov. 1-Jan. 31 All: Feb. 1-June 30	Closed All: Nov. 1-June 30
Weak protection for spring and winter runs; no protection for Sacramento River fall run after May 20 (significant portion of Sacramento fall run outmigration may occur in June); not equivalent to ClubFed proposal	Limited protection for spring and winter runs; full protection for Sacramento River fall run	Full protection for spring, fall and winter runs

X2 CONFLUENCE REQUIREMENT

CUWA/Ag	ClubFed	Enviro
Feb (DI<1.5 MAF): 28 days (and 0 days at Chipps) Apr (dry/crit yrs): 30 days May-June (dry/crit yrs): 28 days (7000 cfs)	150 days	150 days
Exposes estuarine species to unsuitable river channel habitat and influence of pumps; fails to provide Feb req at Chipps in 1/3 of all years; not equivalent to ClubFed proposal.	Greater protection for estuarine species from loss of upstream habitat and exposure to pumps; could be modified to allow relaxation in "outlier" critical years (i.e., 76-77 conditions)	Greater protection for estuarine species from loss of upstream habitat and exposure to pumps; could be modified to allow relaxation in "outlier" critical years (i.e., 76-77 conditions)

Comparison between CUWA/Ag, ClubFed and Environmentalist Proposals
Page 3

DELTA EXPORT CONSTRAINTS

CUWA/Ag	ClubFed	Enviro
Export/inflow ratio (by period): Mar-Jun: 30-35% Jul: 35-55% Aug-Sept: 55-65% Oct-Feb: 65%	QWEST: Feb: 0 Mar. 1-Apr. 15: +2000 Apr. 15-30: 0 Nov-Jan: -2000 Export limits (by water year type): Apr. 1-15: 2000-6000 cfs Apr. 15-May 15: 1500 cfs May 15-31: 2000-6000 cfs	Export function (by month): export/inflow ratio as adjusted by antecedent conditions (i.e., X2 location, inflow averaging period, San Joaquin flow) except 1500 cfs Apr-May
Simple % formula could allow extreme swings in export levels, with adverse impacts from rapidly increased export/"reverse flow" conditions; 35-65% export levels offer little improvement over historical conditions that resulted in population declines, and potential exceedance in some months; particularly, during the Nov-Feb period could allow for higher exports and "reverse flows" than experienced in the past (or allowed under NMFS winter run protections), causing increased take of winter and spring run and other species. Not equivalent to either NMFS QWEST restriction or enviro export function.	Provides direct constraints only during 2/3 of SJR fall run outmigration; QWEST provides indirect export constraint to protect winter run, other species by regulating "reverse flow" conditions for 50% of year.	Prevents extreme swings in export levels and renders export operations more sensitive to biological needs by adjusting % of inflow according to indicators of habitat availability and recent hydrological conditions. Baseline ratios to be determined.

WC Fenley
Wright

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213
TEL (310) 980-4000; FAX (310) 980-4018

NOV 10 1994

F/SW03:GRS

Mr. Harry Seraydarian
Director, Water Management Division
U.S. Environmental Protection Agency
75 Hawthorne St.
San Francisco, California 94105-3901

Dear Mr. Seraydarian:

Thank you for requesting consultation pursuant to section 7 of the Endangered Species Act (ESA) on the water quality criteria for the San Francisco Bay/Sacramento-San Joaquin Delta being promulgated by the Environmental Protection Agency (EPA). EPA is promulgating four sets of water quality criteria intended to protect the designated uses of the Bay/Delta estuary. These are: (1) estuarine habitat criteria, (2) fish migration criteria, (3) fish spawning criteria, and (4) narrative criteria for Suisun Marsh.

During the past year, the National Marine Fisheries Service (NMFS) has been working closely with EPA and the U.S. Fish and Wildlife Service (FWS) to review comments on the draft plan and review options for the final standards. Your staff has provided the results of water project simulation model runs to assist NMFS in evaluating the potential effects of the EPA criteria on the endangered Sacramento River winter-run chinook salmon.

The primary concern for winter-run chinook salmon associated with EPA's criteria is that implementation of the salinity criteria may effect upstream reservoir storage levels and the Bureau of Reclamation's (Bureau) ability to control water temperatures in the upper Sacramento River. Among other things, the February 12, 1993, biological opinion and incidental take statement for winter-run chinook salmon issued by NMFS requires the Bureau to maintain: (1) daily average water temperature in the Sacramento River at no more than 56°F within the winter-run chinook spawning grounds below Keswick Dam, and (2) a minimum end-of-year (September 30) carryover storage in Shasta Reservoir of 1.9 million acre-feet (MAF). If releases from upstream storage are needed to meet the EPA salinity criteria, reduced reservoir storage levels could impact water temperature control operations during the winter-run chinook spawning and incubation period.

To evaluate potential effects to upper Sacramento River water temperatures, NMFS has reviewed the results of the water project simulation models. Modeling results indicate that EPA's criteria would reduce carryover on average by 81,000 acre-feet. However, implementation of the criteria would not increase the number of years between 1922 and 1992 in which Shasta Reservoir fell below the 1.9 MAF minimum carryover level. Therefore, the Bureau should be able to meet its obligation for implementing EPA's Bay/Delta water quality criteria and still provide the temperatures anticipated in the February 12, 1993, biological opinion on the coordinated operation of State and Central Valley Water Projects. In addition, the success of the newly-installed temperature curtains in Whiskeytown Reservoir, commencement of construction on the Shasta temperature control device, and other real-time operational procedures developed by the Bureau, should improve the Bureau's ability to manage temperatures for winter-run chinook salmon.

The modeling results indicate that implementation of the EPA criteria frequently increases Delta outflow and Qwest levels during the spring months, particularly in dry water years. These changes in Delta hydrologic conditions will benefit rearing and outmigrating winter-run chinook salmon during the period of February through May. Since most winter-run chinook salmon actively outmigrate to the ocean from mid-February through April, implementation of EPA's water quality criteria will supplement the Delta protections contained in February 12, 1993 biological opinion. This should improve smolt survival with better flow conditions in the western Delta and reduced entrainment losses at the Delta pumping plants.

The Suisun Marsh narrative criteria addresses the need to develop water quality conditions that support a natural gradient in species composition and wildlife habitat characteristic of a brackish marsh. Winter-run chinook salmon will benefit from this criteria if it results in the development of water quality conditions that reflect a natural salinity gradient from the eastern to the western portions of the marsh. The existing D-1485 criteria which require salinity levels to be uniform throughout the marsh do not reflect historical conditions and are likely to require flow augmentation and operation of facilities that may adversely effect passage of winter-run chinook salmon.

EPA's water quality criteria represent an integrated, ecosystem approach to management of the estuary which should help restore all fisheries resources and habitat, as well as assist in the recovery of the endangered winter-run chinook salmon. I have concluded upon review of the best available information that EPA's water quality criteria are not likely to adversely affect the endangered winter-run chinook salmon or its critical habitat,

and that a formal consultation under section 7 of the ESA is not necessary at this time.

However, NMFS recognizes that EPA must rely on the State of California for implementation of the criteria and that the potential effects of the State's implementation plan can not be known with certainty at this time. NMFS is commited to work closely with EPA and the State agencies in the development of the implementation plan. As you indicted in your letter of October 15, 1993, to NMFS and FWS, our agencies have agreed that the State's proposed implementation plan will constitute new information that may require reinitiation of consultation.

If you have questions concerning these comments, please contact Mr. Gary Stern at (707) 578-7513.

Sincerely,

Hilda Diaz-Soltero
Regional Director

cc: FWS - M. Spear
FWS - W. White
USBR - R. Patterson

PAT Brandes

I AM STILL WORKING ON SOME STUFF Roy & Mike gave me -

Report on Discussions with Federal and State Agencies and Interested Groups
Summary of Areas of Technical Disagreement
on the
Joint Ag/Urban Draft Proposal
for Bay-Delta Standards

DRAFT

November 10, 1994

Introduction

The purpose of this report is to document the areas in which there are technical disagreements concerning the Joint Water Users (Ag/Urban) draft proposal for comprehensive Bay-Delta standards. The Joint Water Users proposing these standards include the member agencies of the California Urban Water Agencies, the San Luis-Delta Mendota Water Authority, the Kern County Water Agency and the Tulare Lake Basin Water Storage District. Comments on the draft proposal were received from technical experts from the U.S. Bureau of Reclamation, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the U.S. Environmental Protection Agency, the California Department of Fish and Game and a number of environmental organizations, including the Natural Heritage Institute and the Bay Institute.

This report documents the key areas of technical disagreement with the proposal raised by Federal agencies and others. It should be noted that all the proposals now being considered cover a wide range of topics and options throughout the year; the areas of technical disagreement have been narrowed down to the two most significant areas (San Joaquin River measures in the spring and export limits) and several others in which the proposals are more closely aligned.

The identification of the areas of technical disagreement was the result of a formal meeting on October 18, 1994 that included technical representatives of the Joint Water Users, State and Federal Agencies, and other interested parties. Attachment 3 is a synopsis of that meeting.

In the discussion that follows, each key issue is defined and the areas of technical disagreement are summarized. The summary is then followed by a brief description of the technical basis for the draft proposal (contributed by the Ag/Urban group) and the technical basis for the disagreement (contributed by the Club FED representatives and others). Attachment 1 contains supporting documentation for the technical basis for the draft proposal, while Attachment 2 contains supporting documentation for the areas in which disagreements were identified.

Summary

Five areas of technical disagreement have been identified; of these, two have been identified as the most significant (San Joaquin River measures directed toward the protection of salmon and export limits). One area (differences in the application of the western Delta habitat protection, or "X2", standards) was identified as an area where the disagreements may not be significant because the proposals are so close. Other areas of disagreement include proposals for cross-channel closures (where the differences are limited) and measures to protect striped bass and warm water spawning habitat. In addition, several areas were identified on which there was general agreement that the Ag/Urban proposal needs clarification. The material below summarizes the disagreements and provides brief statements regarding the technical background

behind the disagreements. As a result of the discussions at the meeting, the Ag/Urban draft proposal was modified; the most significant modification was the incorporation of measures to protect spring-run salmon.

Discussion

1. San Joaquin River: Spring measures for salmon outmigration

Issue

The issue involves the appropriate level of protection directed in large part for outmigrating salmon in the spring. The Ag/Urban draft proposal provides for a thirty (30) day period (the beginning of which is normally April 15, but can be flexible based on monitoring) with required flow levels into the Delta from the San Joaquin River, concurrent export limitations to no more than the San Joaquin River inflow and a concurrent closure of the head of Old River to prevent outmigrating salmon from being diverted directly towards the export pumps.

Summary of the disagreement

The major disagreement, characterized as significant, was identified as the level of protection for San Joaquin fall run smolts in the Ag/Urban proposal. It was pointed out that the level of flows proposed by the Ag/Urban group (2000 cubic feet per second to 5000 cfs) during the one month period are less than those to meet the smolt survival goals in the Club FED alternative (4000 cfs to 10,000 cfs), and that the export limits in the Ag/Urban proposal (although agreed to as an improvement over historical conditions) are higher than the Club FED alternative. It was further pointed out that the combination of lower flows and higher exports would likely produce lower benefits than the Club FED alternative.

Both the Ag/Urban and Club FED proposals provide for the use of the Old River barrier, which will increase the protection of San Joaquin fall run smolts at any given flow and export level. However, it was suggested that its use may have negative impacts on Delta smelt and winter run salmon. The Club FED proposal limits exports to minimal levels (1500 cfs) in order to minimize any potential negative impacts during its one month installation and to give smolts the best possible chance ~~to survive better~~ their passage during the limited pulse flow period.

Another difference that arose concerned the Club FED smolt survival goals and their relationship to the CVPIA fish doubling requirements; while it was indicated that the proposal was consistent with these goals, Club FED believes that the goals and measures are intended to give smolts the best possible chance to survive passage during the pulse flow period and to survive passage at overall levels similar to the target historical (1956-1970) wetter years. The Ag/Urban group does not consider the CVPIA fish doubling goals as part of the Bay-Delta standards, although it believes their proposal is not inconsistent with them. The fact that the Ag/Urban proposal does not include numerical goals was also an issue.

Technical basis for the Ag/Urban Draft Proposal (submitted by the Ag/Urban group)

The CVPIA fish doubling goal is a separate issue from the Bay-Delta standards; the Ag/Urban proposal is not inconsistent with those goals, but the Ag/Urban group does not consider them to be part of the Bay-Delta proceedings. Furthermore, the Ag/Urban proposal does not establish specific numerical goals for smolt survival as a standard, or as a benchmark upon which to

PAT Brandes

I AM STILL working on some stuff
Gary & Mike said no

Report on Discuss
Su

Post-it™ brand fax transmittal memo 7671 | # of pages ▸

To Susan Hatfield	From Pat Brandes
Co. EPA	Co. USFWS
Dept.	Phone # 209-946-6400
Fax #	Fax #

FT

Introduction

The purpose of this report is to document the areas in which there are technical disagreements concerning the Joint Water Users (Ag/Urban) draft proposal for comprehensive Bay-Delta standards. The Joint Water Users proposing these standards include the member agencies of the California Urban Water Agencies, the San Luis-Delta Mendota Water Authority, the Kern County Water Agency and the Tulare Lake Basin Water Storage District. Comments on the draft proposal were received from technical experts from the U.S. Bureau of Reclamation, the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, the U.S. Environmental Protection Agency, the California Department of Fish and Game and a number of environmental organizations, including the Natural Heritage Institute and the Bay Institute.

This report documents the key areas of technical disagreement with the proposal raised by Federal agencies and others. It should be noted that all the proposals now being considered cover a wide range of topics and options throughout the year; the areas of technical disagreement have been narrowed down to the two most significant areas (San Joaquin River measures in the spring and export limits) and several others in which the proposals are more closely aligned.

The identification of the areas of technical disagreement was the result of a formal meeting on October 18, 1994 that included technical representatives of the Joint Water Users, State and Federal Agencies, and other interested parties. Attachment 3 is a synopsis of that meeting.

In the discussion that follows, each key issue is defined and the areas of technical disagreement are summarized. The summary is then followed by a brief description of the technical basis for the draft proposal (contributed by the Ag/Urban group) and the technical basis for the disagreement (contributed by the Club FED representatives and others). Attachment 1 contains supporting documentation for the technical basis for the draft proposal, while Attachment 2 contains supporting documentation for the areas in which disagreements were identified.

Summary

Five areas of technical disagreement have been identified; of these, two have been identified as the most significant (San Joaquin River measures directed toward the protection of salmon and export limits). One area (differences in the application of the western Delta habitat protection, or "X2", standards) was identified as an area where the disagreements may not be significant because the proposals are so close. Other areas of disagreement include proposals for cross-channel closures (where the differences are limited) and measures to protect striped bass and warm water spawning habitat. In addition, several areas were identified on which there was general agreement that the Ag/Urban proposal needs clarification. The material below summarizes the disagreements and provides brief statements regarding the technical background

San Joaquin salmon populations are at critically low levels and may currently warrant protection under the ESA. Various analyses have shown that adult escapement is significantly correlated to the export and flow conditions during the smolt outmigration 2½ years earlier. This confirms the hypothesis that conditions in the Delta are critical to the maintenance and restoration of the run. Measures to significantly improve the survival of San Joaquin smolts through the Delta are essential. A survival goal as an integral part of the Club FED plan. Club FED believes such a goal is necessary to ensure protective measures are performing as expected. Club FED has incorporated a smolt survival goal because it is directly linked to the lifestage targeted to benefit from the proposed actions. Other measures of improvement (harvest and escapement) are desired but factors outside of Delta operations could obscure relationships and adult measures will not be available until two to four years after the smolt outmigration. The survival goal will also allow revision if new, better protection measures can be implemented in the future.

Although survival, as measured by the San Joaquin smolt survival model, is estimated to be greater than historic conditions in dry years with the Ag/Urban proposal, it only increases from an average of 0.17 (~~1965 to 1989) to 0.17~~ (see Table 1). The low level of ~~increased~~ protection offered in the Ag/Urban proposal is inadequate, because it is not an ~~appreciable~~ improvement over historical conditions. This level of protection does not provide assurance that this run will not be listed through the ESA process in the near future (certainty issue). The Club FED proposal increases San Joaquin smolt survival to an average of 0.24 (1965-1989) as measured by the San Joaquin smolt survival model.

The difference between improvements in the proposals modeled by the Ag/Urban group and that done by the Club FED representatives are due to: 1) the Ag/Urban group used the historical base on which to superimpose the conditions of the two proposals. Club FED used the DWRSIM 1995 level of development operation study with 6.0 million acre feet of demand, because it is more representative of how the projects will operate in the future than the historical base. 2) the Ag/Urban group limited exports to 6000 cfs in April and May; exports are often likely to exceed this level with the Ag/Urban proposal. 3) Ag/Urban estimated 80% of smolts in the San Joaquin basin would be protected during the one month change in operations. Estimates during recent dry and critical years indicate approximately 64% of outmigrants pass Mossdale in the 28 days centered on May 1 (WRINT-DFG-25). Table 1 (in Attachment 2) reflects the benefits expected with ~~the~~ 64% of the smolt outmigration passing during the one month barrier installation. 4) Due to the fact that the model is estimating the benefits of a barrier, using data obtained without the barrier, benefits are overestimated in both proposals due to the inability of the model to accurately reflect the increased reverse flows at Lower Old an Middle River at any one export level when the barrier is in place.

Delta smelt "take" levels increased following the installation of the Old River barrier in 1994 due to increased reverse flows in lower Old and Middle rivers (central Delta). To minimize risks to Delta smelt and winter-run, and to provide the best possible conditions during the limited pulse flow period, exports levels should be reduced to minimal levels when the barrier is in place.

The best available information indicates that San Joaquin flows, export restrictions, and an upper Old River barrier are the best measures to protect San Joaquin salmon outmigrants. As these

measures are implemented, modifications may be necessary or new methods may become available. Survival goals will allow the kind of flexibility to insure that substitutes can be made without compromising the level of protection.

Evidence indicates that the peak of San Joaquin salmon smolt emigration into the Delta is between mid-April and mid-May. The success of basing the 30-day period on real time monitoring is uncertain and untested, and the USFWS does not believe that it will work with the low number of smolts currently migrating down the San Joaquin. However if real-time monitoring is thoroughly tested before use, and proves to be accurate and useful in meeting survival goals, the it can and should be incorporated into the implementation plan in the future.

2. Export Limits

Issue

The Ag/Urban draft proposal provides for exports to be limited to a percentage of inflow to the Delta. The proposed percentages vary with time of the year. They provide for modest relaxations in some months provided that no adverse impacts on native species can be demonstrated. The disagreements focus on the level of protection provided in some months, particularly February, and the trigger for relaxation to the higher percentage. The areas of disagreement are divided below into three time periods: February, March through June, and July through January.

2.1 February Limits

Issue

The Ag/Urban draft proposal provides for exports of no more than 65% of Delta inflow. There is disagreement whether this provides sufficient protection overall.

Summary of the disagreement

Raised as concerns are the high rate of export pumping that would be allowed in the presence of a large portion of the juvenile winter-run chinook population. Since the Cross Channel is proposed for closure in February, the frequency and magnitude of net reverse flow conditions in the lower San Joaquin River (as measured by "QWEST", an index for the flow, Q, in the western Delta) would increase over historic conditions with the Ag/Urban export limit. Significantly higher export rates would occur in drier years than allowed under the existing NMFS biological opinion for winter-run chinook salmon. "Take" of juvenile winter-run chinook at the Delta fish facilities may increase. The importance of the QWEST index to salmon smolt survival has been questioned by the Ag/Urban representatives.

Technical basis for the Ag/Urban Draft Proposal (submitted by the Ag/Urban group)

There are two common points that are addressed in this section. These are: A) the overall basis for the Ag/Urban proposal on export limits, and B) the use of the QWEST index to limit exports. These are addressed only in this subsection. The discussions related to each time period are addressed in all the subsections.

A) Overall Basis for the Export Limits of the Ag/Urban Proposal

The biological objective of the limits is to reduce fish, egg, and larvae entrainment and mortality at the pumps through export restrictions and intensive real-time monitoring/response designed to detect presence of fish in areas adjacent to the pumps. Development of the export/inflow concept was founded on two basic principals which include (1) exports should decrease when fresh water inflow to the Delta is reduced and a larger percentage of fish and other aquatic organisms are distributed further upstream where they are more susceptible to export losses, and (2) the percentage of water diverted in recent years, particularly during the spring, has increased substantially above levels (expressed as a ratio of exports to inflow) during earlier years when aquatic resources inhabiting the Bay-Delta system were at more acceptable levels.

State Water Project fish salvage records were used to evaluate the seasonal distribution in susceptibility and loss resulting from water project operations. Review of salvage data shows that the losses for striped bass, chinook salmon, American shad, Sacramento splittail, longfin smelt, and delta smelt were greatest in April (10%), May (23%), June (24%), and July (16%). Over 70% of the combined average losses for these species occurred between April and July. Average monthly losses ranged from 2 to 6 percent between August and March. In addition to salvage losses relatively large numbers of fish eggs and larvae, which are not accounted for in salvage data, are susceptible to entrainment losses during the spring (April-June). Thus, relatively low export/inflow ratios were specified during the spring when fish are especially vulnerable to entrainment at the pumps, with a general increase in allowable exports during other times when fish are less vulnerable to diversion losses.

The Ag/Urban export limits should not be examined simply by themselves, since the proposal is designed as a comprehensive package that takes an ecosystem approach to the Bay-Delta and does not address the problem in a species-by-species approach. In addition to the export limits, minimum flows are proposed throughout the year. The combination of the proposed flows and export limits provides significant improvement in overall habitat conditions in the Delta.

B) Use of QWEST to Limit Exports

The "QWEST" index has been historically used to estimate the "net reverse flow" in the lower San Joaquin River. QWEST is not measured, but calculated based on Delta inflows and exports. Attempts to correlate QWEST with biological factors, such as salmon smolt survival, result in poor correlations of questionable significance. It is implicitly assumed that tidal factors play no part in the relationship, an incorrect assumption because tidal flows are 100 times larger than QWEST levels. The real net flows in the Delta are up to ten times larger than the QWEST index, so actual Delta flows are not described by the index. The fundamental assumption that the QWEST index is significantly related to transport has been called into serious question and is not supported by field data; there is abundant evidence that contradicts the assumption.

The use of export/inflow ratios to limit exports has been questioned. Interestingly, the use of the QWEST index to limit exports is mathematically no different than the use of an export/inflow ratio as in the Ag/Urban proposal. The Ag/Urban proposal states that exports must not exceed a given fraction of the total inflow to the Delta (total inflow is the sum of the inflows from the Sacramento River, San Joaquin River and miscellaneous streams); the QWEST export limit proposed by Club FED states that exports must not exceed a fraction of the Sacramento River inflow (the fraction is about 30% when the Delta cross-channel is open, 13%

when the cross-channel is closed), plus 100% of the inflow from the San Joaquin River and miscellaneous streams, plus (or minus) a given flow level. (Note that the fraction of the Sacramento River water that is allowed to be diverted in the Club FED proposal is anomalous: when the cross-channel is open, and survival of smolts is reduced, more pumping is allowed; when it is closed, and survival is increased, less pumping is allowed.)

Both methods in fact use an export/inflow ratio; the difference is that the Ag/Urban group proposes the ratio be based upon the biological activity over the year, whereas the Club FED proposal uses fixed ratios (with adjustment for the cross-channel as noted above) and adjusts the given flow level (e.g., QWEST at 2000, 0 or -2000) over the year. It is not surprising that in many instances the final results are quite similar.

In response to the concern that the proposed levels are higher than historical averages, it is noted that the proposed requirements are for the maximum allowable levels, not the average levels, and comparison with average levels is technically inappropriate. Precisely the same argument could be made against the proposed QWEST levels (for example, since 1968, the proposed level for February has been exceeded only three times, and the average level for February is over 12,000 cfs). It is not a question of average levels, but of the maximum levels.

C) Specifics with Respect to February

The Ag/Urban approach for the proposal is to develop a comprehensive ecosystem approach, that includes improved habitat (through X2 requirements and minimum flow levels) and export limits that shift pumping away from the months of greatest vulnerability to losses at the export pumps to months of lesser vulnerability, as explained above. Other measures, such as closure of the Delta cross-channel, address additional specific needs in February.

Examination of the modeling results show an overall decrease in pumping in drier years due to the proposed limits (Attachment 1, pages 23 & 27). The data also indicate that overall, the two proposals are not very dissimilar in the distribution of pumping levels, with the Ag/Urban proposal allowing higher pumping (by about 1000 cfs) at the same frequency. The Ag/Urban group is further evaluating these data to better understand the differences.

Technical basis for the disagreement (submitted by the Club FED group)

Review of Delta conditions during the period of 1955 to 1992 indicates that this level of export does not provide additional protection overall and provides significantly less protection than the current NMFS biological opinion for winter-run chinook salmon. Exports levels have only slightly exceeded 65% in February 2 of the past 38 years (67 and 72 percent) (see table 2). The Ag/Urban proposal will allow high export rates and very negative levels of QWEST. With the Cross-Channel gates closed, QWEST will be negative more frequently, for a longer duration, and to greater negative levels than under historic conditions. These Central Delta hydrologic conditions, as measured by QWEST, will be adverse for both rearing and outmigrating salmon juveniles, particularly winter-run chinook salmon. "Take" levels of winter-run chinook salmon are likely to increase significantly over the existing NMFS biological opinion due to higher exports and reduced QWEST. Mortality of Sacramento River spring-run smolts and fall-run chinook fry may also increase over current levels.

Export and QWEST have been found to be correlated to salmon smolt survival in the Central Delta and downstream of Ryde on the mainstem Sacramento River, respectively (Figures 1, 2, and 3, Attachment 2). Percentage of inflow has not shown any correlation.

Export/inflow levels do not assure downstream flow from the Central Delta and San Joaquin River to the ocean and can decrease QWEST levels over the historical period and that provided in the Biological Opinion. Although QWEST is only an index it appears to be the best parameter to monitor if net downstream flow from the San Joaquin River and Central Delta to the Western Delta is desired. Ideally, QWEST values should be positive all year round, but the Club FED package has prioritized them during the peak winter run outmigration period.

In Attachment 1, several tables and graphs are shown comparing historical export/inflow levels, for all months, to proposed export/inflow levels to support the Ag/Urban statement that there is "an overall decrease in pumping in drier years due to the proposed limits". Club FED believes this is not the correct data to compare to evaluate the statement because the graphs comparing historical levels to new levels do not use the proper base for comparison. The DWRSIM operations model should be used as a base to compare historical values. The DWRSIM model takes into consideration how the project will be operated in the future, given the new set of Delta protective criteria, and not the change in the export/inflow ratio that would have been constraining for years in the past. Both proposals need to be compared to historical levels to compare the various elements and their potential improvement to recent historical levels.

Club FED desires to endorse an ecosystem approach to the Bay-Delta standards and believes actions to protect a multitude of species (longfin smelt, Delta smelt, striped bass, all races of chinook salmon, splittail, Cragnon, etc.) is the way to achieve such an objective. Ideally, goals would be established for each species within the ecosystem and success of improvements in Delta habitat conditions could be measured. Unfortunately, data is unavailable for many species, so the needs of certain species were identified in the Club FED pal to serve as surrogates for the ecosystem as a whole.

The Ag/Urban group has proposed what they say is based on an ecosystem approach, but no goals are set, making it difficult to ensure adequate protection of either specific species or the ecosystem.

2.2 March - June Limits

Issue

The Ag/Urban proposal provides for exports of no more than 30% of Delta inflows during this period, with a relaxation to 35% if no significant impact to native species can be demonstrated. The triggering mechanism for the relaxation has not yet been defined.

Summary of the disagreement

This was characterized as potentially an area in which there may not be significant disagreement. Raised as concerns are the rate of export pumping that would be allowed in the presence of all

races of Sacramento and San Joaquin juvenile chinook salmon and whether the Ag/Urban proposal provides for an increased level of protection over historic conditions. There were also questions about the goals and objectives of the Ag/Urban proposal and the significance of the export/inflow relationships with respect to smolt survival.

Technical basis for the Ag/Urban Draft Proposal (submitted by the Ag/Urban group)
As discussed under subsection 2.1, the goal of the Ag/Urban proposal is to develop a comprehensive approach to improvement of the Bay-Delta ecosystem, rather than a species-by-species approach. As discussed earlier, there is no fundamental mathematical difference between the use of export/inflow relationships and the use of QWEST to limit exports; there is only a difference in the particular ratios and constant levels picked. In many instances, the two methods give very similar results.

Examination of the data (Attachment 1, pages 23-24) shows that the Ag/Urban proposal provides for significant improvement in protection for all species in this period. Export ratios and absolute levels of exports are reduced over historical levels, especially in the critical dry periods. Delta outflow levels are increased, improving the Delta habitat. Operations studies also show significant overall improvement in habitat and protection for this period (Attachment 1, pages 28-29), especially in the March and April period that is critical for many species.

The use of higher export levels is intended to be triggered only if it can be shown that there are no adverse impacts to native species. The exact mechanism that might be used is still being developed.

Technical basis for the disagreement (submitted by the Club FED group)
The fisheries agencies want protection levels to be significantly improved over the recent historical period and the Ag/Urban proposal provides little improvement over historic conditions. There is no biological basis for selection of the export percentages. Higher rates of pumping during March and April would be allowed in drier years than under the existing NMFS biological opinion for winter-run chinook salmon and is likely to result in an increase level of "take" in March and April. May and June export rates could be higher than D1485 conditions. With the closure of the Cross-Channel gates, the level of QWEST index would decrease over historic conditions, particularly in dry water years. With high in-Delta diversion rates during the spring months, total Delta withdrawals could be significantly higher than 30-35 percent. Higher losses of fall-run chinook salmon from the Sacramento and San Joaquin rivers as measured at the Delta fish salvage facilities may occur.

The trigger mechanism for relaxation to a higher export percentage has not been defined. Thus, the trigger's ability to accurately detect no significant impact is unknown. The success of basing the export rates/protection actions on this trigger is unknown.

2.3 July - January Limits

Issue
The Ag/Urban draft proposal provides for levels of exports varying from 35% to 65% of Delta inflow, depending on month. Months with levels below 65% provide for relaxations if it can

be demonstrated that there is no significant impact to native species. The triggering mechanism for the relaxation needs to be defined.

Summary of the disagreement
The Ag/Urban draft proposal provides for export limits July through January; other proposals do not restrict the July through October period. There was concern that the rate of export pumping that would be allowed in November, December, and January is higher than historical levels and would occur in the presence of Sacramento River juvenile spring-run, late fall-run, and winter-run chinook salmon. Protection measures for Sacramento River spring-run chinook smolts and the early portion of the winter-run chinook outmigration were not been included in the Ag/Urban proposal.

Representatives from the California Department of Fish and Game disagreed with the proposed limits because they are higher than the historical averages and they do not believe that they are sufficiently protective of fisheries, including striped bass.

Technical basis for the Ag/Urban Draft Proposal (submitted by the Ag/Urban group)
As discussed under subsection 2.1, the goal of the Ag/Urban proposal is to develop a comprehensive approach to improvement of the Bay-Delta ecosystem, rather than a species-by-species approach. The proposal shifts exports from the spring and summer, the most critical period for many species in terms of migration, spawning and rearing, to the fall and winter. The Club FED proposal shifts the pumping from the spring into the early summer (Attachment 1, page 30), a period when historically there have been significant entrainment losses at the export pumps and when juveniles are rearing in the Delta. The Ag/Urban group proposed to continue protection in this critical period, rather than removing all restrictions, in order to continue to maintain the improvements gained in the spring period. Consequently, both export restrictions and minimum flow levels are proposed, unlike the Club FED proposal which has neither.

Concern was expressed that the proposed levels would allow higher exports on a more frequent basis. Examination of the data from the operations studies (Attachment 1, pages 27, 31-32) shows this not to be the case. The two proposals show remarkably similar distributions of export levels in this period, and that they offer similar levels of protection in terms of exports. However, the Ag/Urban proposal includes minimum Delta outflows to ensure improved ecosystem habitat at the same time.

The Ag/Urban group has considered the comments concerning measures to protect spring-run chinook salmon and found them to be valid. The proposal has been modified to change the January closure of the Delta cross-channel to a closure of up to 30 days, based upon monitoring, from November through January.

Technical basis for the disagreement (submitted by the Club FED group)
Export limits proposed for November, December, and January would allow pumping rates to be higher in drier years than under the existing NMFS biological opinion for winter-run chinook salmon. Due to the proposed export restrictions during the spring months, pumping rates would frequently be higher than historic levels during October, November and December (see table 3).

The level of QWEST index would decrease in drier water years and significantly decrease in combination with the 30-days of Cross Channel gate closure. The fisheries agencies believe that Delta conditions during the fall and early winter period could become more adverse than historic conditions. Direct losses of Sacramento River spring-run, late fall-run, and winter-run chinook salmon juveniles as measured at the Delta fish salvage facilities may increase.

The Ag/Urban representatives noted that the proposed requirements are for the maximum allowable levels, and comparison with average levels is technically inappropriate, but pumping constraints imposed during the spring time will require greater reliance on export pumping in the fall months and maximum export levels may frequently occur. The Ag/Urban proposal provides for significantly less protection for rearing and migrating salmon during November, December, and January than the existing NMFS biological opinion for winter-run chinook by allowing higher than historical levels of export and very negative QWEST conditions.

Sacramento River spring-run chinook are at critically low levels and may warrant protection under the ESA. The Ag/Urban proposal does include a Delta cross-channel closure for 30 days between November and January, but without QWEST constraints reverse flows could negate much of the benefit derived from closing the cross-channel gates.

3. X2 Sliding Scale

Issue

The Ag/Urban draft proposal provides for an X2 standard based on sliding scales derived from a mean of the 1968-1975 level of development, along with a modification in February that requires X2 at the confluence for the entire month, but relaxes the requirement at Chipps Island in dry years. In addition, it provides for X2 at the confluence in April, and minimum flows in May and June. The mechanism for the February relaxation is still being developed.

The major difference with the Club FED proposal is that the Club FED proposal provides for X2 to be located at the confluence for 150 days in all years. There is a minor difference with the sliding scales, which in the Club FED proposal were based upon the 1968 level of development. Practically speaking, the overall difference between the two proposals is small.

Summary of the disagreement

The disagreement was characterized as probably not significant because the two proposals appear to be very close. There was concern expressed that a flat requirement of 150 days at the confluence, with no relaxation for very dry years could result in detrimental effects on upstream reservoirs. There was also concern expressed that the Ag/Urban proposal did not provide for the 150 days and that it did not guarantee that the X2 position actually reach a given location, but there was disagreement over the significance of the latter item.

Technical basis for the Ag/Urban Draft Proposal (submitted by the Ag/Urban group)

Responding to comments at the meeting, the Ag/Urban group defined the February modification by changing the sliding scale for that month. The proposal now includes a requirement that the X2 standard be met at the confluence for the entire month of February in all years, and relaxes the Chipps Island requirement slightly in years with low runoff in January.

The proposal is based upon the use of the average of the 1968-1975 level of development. The figures in Attachment 1 (pages 7-8) show that in fact that there is not very much practical difference between the proposals and that the biological benefits of the two proposals are indeed very similar.

Technical basis for the disagreement (submitted by the Club FED group)
In joint testimony to the State Water Resources Control Board EPA, NMFS and USFWS suggested that the late 1960's and early 1970's appeared to provide adequate habitat for estuarine species. The adequacy of this habitat appears to rest on two factors: a suitable level of development that existed up to or prior to this time and the level of unimpaired flow that occurred at that time.

The two-variable model relating unimpaired flow and level of development assumes that the level of development acts upon an average level of unimpaired flow. However, in the period from 1965 to 1975 there were no dry or critically dry years, so the impacts of level of development were attenuated by the relatively high levels of flow. The average 8-River Index for this period is roughly 20% greater than the rest of the period of record (1965-1975, average=27.845 MAF, 1906-1964 & 1976-1992, average=22.805 MAF). From this EPA concludes that the impacts of the level of development in the 1968-1973 period were masked by substantially wetter than average years. Therefore, the suitable level of development occurred prior to the late 60's and early 70's. Without knowing the quantitative abundances of most estuarine species for any years prior to 1967 it is impossible to say at what time the level of development of the water projects was consistent with the habitat needs of estuarine species. EPA's choice of 1968 is the highest possible level of development consistent with these findings.

It is unclear how the CUWA/Ag staff arrived at 1971.5. If the late 60's to early 70's is defined as the period from 1968 to 1973, the average would be 1970.5

The Club FED requirement of Chipps Island in all years is based on the extremely low level of variability on this parameter in the historical record from 1930 to 1978. If a trigger for this requirement is felt to be necessary there appear to be two possible justifications:

> A substantial reduction in water cost in the driest years would be found by making the February requirement the same as the March requirement. This approach would reduce the inconsistency in the protective level as the projects move from February to March. This would imply a trigger at approximately 0.8 MAF unimpaired flow in January.
>
> Alternatively, one could look only at the "super-critical" years that the Ag/Urban group suggests are the reason for this concern and tie the trigger to the highest January unimpaired flows that occurred in those cases. Total unimpaired flows in 1977, 1924 and 1931 were less than 7.8 MAF whereas all other years had more than 10 MAF. If these are the only "super-critical" years, then the trigger for Chipps Island could be 0.8 MAF unimpaired runoff for January (the highest unimpaired flows that occurred in these three years). This, however, would result in 19 out of 86 years not having a Chipps requirement in February, substantially more that the 2 years in EPA's proposal.

Note that either of these justification ignore the fact that, until 1976, salinities at Chipps Island in February had been less than 2 ppt in every year.

4. Cross Channel Closures

Issue

The only significant disagreement identified was the closure in June in the Club FED proposal. The Ag/Urban group considered the comments on measures for spring-run salmon and, as a result of these discussions, has included in the draft proposal a 30 day closure in November through January based upon monitoring parameters (including flows and turbidity as well as fish monitoring, as suggested in the meeting). Alternative June closure schemes (weekdays only) were suggested and are being considered by the Ag/Urban group.

Summary of the disagreement

The Ag/Urban draft proposal does not provide for a closure in June. It was suggested that this is beneficial to late outmigrating salmon.

Technical basis for the Ag/Urban Draft Proposal (submitted by the Ag/Urban group)

The Ag/Urban group did not propose the June period for closure because of conflicts with recreational uses in the Delta (the closure significantly affects boaters in the Delta). Alternatives have been proposed, and the group is considering a proposal that would close the cross-channel on portions of the week, as a means of meeting the needs of both fisheries and recreational users.

Technical basis for the disagreement (submitted by the Club FED group)

Significant numbers of fall-run chinook salmon for the Sacramento River would be protected by closure of the Cross Channel gate in late May and June. As proposed by Ag/Urban the opening of the gate on May 20 would allow large numbers of fall-run chinook smolts (see table 4) to enter the central Delta where survival will be significantly reduced by predation, high water temperature, poor water quality, entrainment by unscreened diversions, etc.

A survival goal is an integral part of the Club FED plan and is considered necessary to insure the cross channel gate closures and export restrictions are performing as expected. The survival goal will also allow revision if new, better protection measures can be implemented in the future.

5. Striped Bass and Warm Water Spawning Standards

Issue

The Ag/Urban draft proposal does not include specific measures on the San Joaquin River for warm water fish spawning. This appears to be more of a policy question than a technical issue. Brief summaries are presented here.

Summary of the disagreement

The Department of Fish and Game disagreed with the absence of specific measures to protect and enhance the striped bass population. While the Ag/Urban proposal does not include specific measures for striped bass, the overall proposal will benefit the striped bass population. The

Ag/Urban proposal does not include the EPA warm water spawning standards in the San Joaquin River downstream of Vernalis.

Basis for the Ag/Urban Position (submitted by the Ag/Urban group)

The Ag/Urban proposal does not include specific, additional measures to enhance striped bass populations attributable to San Joaquin River spawning. It is considered to be unnecessary, at this time, to revise the striped bass protections adopted in the 1991 Water Quality Control Plan. This recommendation is based on 1) fishery resource management concerns, 2) the scientific evidence concerning the needs of spawning striped bass, and 3) regulations that prohibit the dilution of pollutants with fresh water releases.

Technical basis for the disagreement (submitted by the Club FED group)
No comments submitted. The Club FED proposal is part of the draft EPA standards.

6. Issues on which clarification was requested

Measures for spring-run salmon and for rearing of salmon in the Delta in the late fall
A lack of specific measures for spring-run salmon and for the rearing of salmon in the Delta in the late fall was noted by USFWS. The Ag/Urban group has considered these comments and has subsequently incorporated Delta cross-channel closures for up to 30-days from November through January, based upon monitoring, to address this issue.

Category III - Legal Fishing
The inclusion of legal fishing limits as part of SWRCB requirements was objected to by the Department of Fish and Game. This was raised as a policy issue, and possibly a technical issue. It was stated that this is regulated independently and takes into account the status of the species. This is addressed in the Ag/Urban documentation of the draft proposal.

Monitoring
The use of fish monitoring to determine operational levels was questioned as the basis of feasibility (for low-population species) and because it may result in technical disputes if not properly devised. There was agreement that these are technical issues that need to be addressed to ensure an adequate program is implemented.

Acoustical Barrier
It was suggested that the acoustical barrier be consistently applied on a year round basis. It is recognized by all that the acoustical barrier is still under development and it is still considered experimental.

Attachments
1) Supporting Documentation for the Draft Proposal
2) Supporting Documentation for the Disagreements
3) Synopsis of the October 18, 1994 Meeting

/GG C:\WP51\DOCS\10OCTSUM.RPT 11/11/94 11:46

TABLE 1

	DAYFLOW	OP STUDY	OP STUDY & AG/CUWA (FLOW & EXPORT)	OP STUDY & AG/CUWA (Flow/Export/ Barrier)	OP STUDY & EPA
W	.34	.22	.21	.26	.38
AN	.08	.07	.11	.14	.20
BN	.04	.05	.08	.11	.16
D	.04	.04	.06	.10	.13
C	.04	.03	.07	.10	.13
$\bar{x}$	.17	.12	.13	.17	.24

1.) 64% of fish going through Delta between April 15-May 15, 18% of fish from April 1-April 14, 18% of fish from May 16-May 31.

2.) All studies (dayflow, op study, AG/CUWA flow & exports, AG/CUWA flow, exports and barrier, and EPA) use 1965-1989 hydrology.

3.) Operational study used DWRSIM with 1995 level of development and 6.0 million acre feet demand.

table.wpf

TABLE 2

% EXPORTED BY MONTH

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1955										13	3	0
1956	0	0	1	1	1	3	19	21	10	4	0	0
1957	0	4	3	3	6	14	33	29	14	5	2	0
1958	0	0	0	0	1	1	15	19	9	7	3	1
1959	1	1	6	6	21	40	35	27	15	14	7	2
1960	1	1	6	6	15	32	37	34	18	17	4	0
1961	2	2	7	7	20	34	42	32	20	18	7	1
1962	3	0	2	2	12	21	36	28	15	3	4	0
1963	2	1	6	6	5	13	29	29	11	12	2	0
1964	2	7	13	13	20	30	37	32	16	19	4	0
1965	0	3	7	7	8	15	29	24	11	9	2	0
1966	0	2	9	9	21	38	36	32	18	17	5	1
1967	1	1	3	3	2	3	8	23	12	8	6	3
1968	4	3	10	10	37	37	37	34	40	46	32	14
1969	5	3	3	3	5	5	16	23	10	9	5	2
1970	1	2	4	4	22	32	34	27	14	14	8	2
1971	3	8	13	13	14	18	28	28	14	19	17	9
1972	6	14	25	25	45	35	31	41	37	35	13	11
1973	3	1	2	2	31	39	45	43	29	29	8	4
1974	1	8	7	7	20	30	44	36	17	18	7	9
1975	23	11	8	8	15	14	24	41	32	30	29	26
1976	44	51	49	49	44	33	30	46	58	48	45	30
1977	63	47	52	52	36	8	8	18	25	13	35	46
1978	14	16	7	7	6	37	48	45	34	30	33	37
1979	13	6	10	10	28	40	50	58	54	47	32	24
1980	5	5	4	4	16	24	31	52	37	41	43	34
1981	35	25	16	16	27	31	41	56	47	51	12	5
1982	5	9	12	12	9	10	15	31	16	18	14	9
1983	10	6	2	2	3	6	9	20	11	7	2	1
1984	2	12	16	16	29	33	38	43	25	30	25	21
1985	27	33	47	47	37	41	49	61	60	63	57	51
1986	38	3	2	2	26	31	41	52	45	37	41	41
1987	38	33	21	21	40	40	51	58	66	52	54	52
1988	36	72	59	59	47	45	48	57	60	52	47	51
1989	71	60	21	21	37	33	46	56	59	66	62	61
1990	52	67	69	69	26	28	41	43	51	38	41	43
1991	48	49	33	33	29	18	23	36	38	50	36	29
1992	54	20	45	45	20	19	15	26	41			
59-91 MEAN	17	17	17	17	23	27	34	38	31	29	22	19
59-76 MEAN	6	7	10	10	20	26	32	32	22	20	11	6
77-91 MEAN	30	30	25	25	26	28	36	46	42	40	36	34

TABLE 3: Average Export/Inflow Ratios by Water Year Type ...

YT	CODE	N	MEAN	MEDIAN	TRMEAN	STDEV	SEMEAN
AN	C 1	5	48.60	48.00	48.60	9.99	4.47
	D 2	4	42.75	36.50	42.75	19.40	9.70
	B 3	3	7.67	6.00	7.67	4.73	2.73
	A 4	3	7.33	5.00	7.33	5.86	3.38
	W 5	10	8.90	4.00	6.25	12.23	3.87
EB	1	5	57.20	51.00	57.20	11.45	5.12
	2	4	37.75	33.00	37.75	15.31	7.65
	3	3	7.67	6.00	7.67	5.69	3.28
	4	3	7.33	5.00	7.33	7.77	4.48
	5	10	6.30	7.00	6.25	3.89	1.23
AR	1	5	52.40	52.00	52.40	13.30	5.95
	2	4	26.25	21.00	26.25	14.03	7.02
	3	3	15.00	10.00	15.00	8.66	5.00
	4	3	4.33	4.00	4.33	2.52	1.45
	5	10	7.00	5.50	6.50	5.10	1.61
PR	1	5	52.40	52.00	52.40	13.30	5.95
	2	4	26.25	21.00	26.25	14.03	7.02
	3	3	15.00	10.00	15.00	8.66	5.00
	4	3	4.33	4.00	4.33	2.52	1.45
	5	10	7.00	5.50	6.50	5.10	1.61
AY	1	5	36.40	36.00	36.40	9.13	4.08
	2	4	35.25	37.00	35.25	5.68	2.84
	3	3	36.67	37.00	36.67	8.50	4.91
	4	3	17.67	16.00	17.67	12.58	7.26
	5	10	14.50	14.50	14.25	9.65	3.05
UN	1	5	26.40	28.00	26.40	14.15	6.33
	2	4	36.25	36.50	36.25	4.99	2.50
	3	3	37.33	37.00	37.33	2.52	1.45
	4	3	33.33	37.00	33.33	8.14	4.70
	5	10	18.20	16.00	18.25	12.25	3.88
UL	1	5	30.00	30.00	30.00	15.64	6.99
	2	4	46.75	47.50	46.75	4.35	2.17
	3	3	39.33	37.00	39.33	9.71	5.61
	4	3	41.33	45.00	41.33	9.07	5.24
	5	10	25.70	26.00	25.62	13.33	4.21
AUG	1	5	40.00	43.00	40.00	14.44	6.46
	2	4	57.75	57.00	57.75	2.36	1.18
	3	3	44.33	41.00	44.33	12.34	7.13
	4	3	46.67	45.00	46.67	4.73	2.73
	5	10	32.40	29.50	31.50	10.35	3.27
SEP	1	5	46.40	51.00	46.40	14.74	6.59
	2	4	58.00	59.50	58.00	7.96	3.98
	3	3	43.67	40.00	43.67	9.07	5.24
	4	3	33.33	34.00	33.33	4.04	2.33

	5	10	19.60	15.00	17.63	11.23	3.55
CT	1	5	40.20	48.00	40.20	16.13	7.21
	2	4	58.00	57.50	58.00	7.62	3.81
	3	3	42.67	46.00	42.67	6.66	3.84
	4	3	33.33	30.00	33.33	6.66	3.84
	5	10	19.00	18.00	18.25	10.32	3.26
OV	1	5	40.80	41.00	40.80	5.31	2.37
	2	4	46.2	55.5	46.2	23.1	11.5
	3	3	25.67	32.00	25.67	10.97	6.33
	4	3	28.0	33.0	28.0	18.0	10.4
	5	10	15.40	11.00	13.88	12.64	4.00
EC	1	5	39.80	43.00	39.80	9.83	4.40
	2	4	42.2	51.5	42.2	25.2	12.6
	3	3	16.33	14.00	16.33	6.81	3.93
	4	3	25.0	34.0	25.0	18.2	10.5
	5	10	12.30	9.00	10.12	13.11	4.14

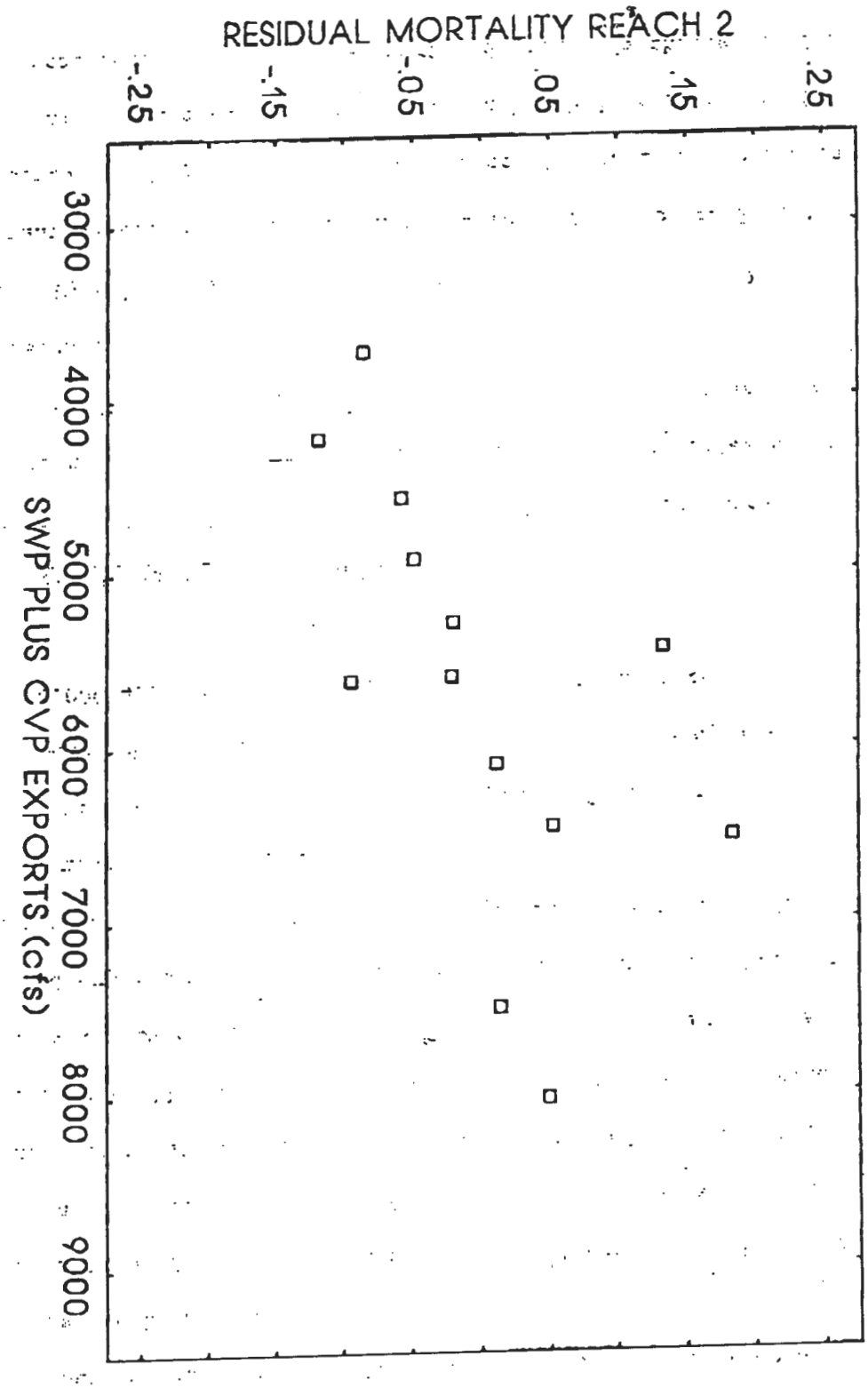


FIGURE 8.1, RESIDUAL CHINOOK SALMON SMOLT MORTALITY VERSUS AVERAGE DAILY WATER TEMPERATURE AT FREEPORT ON RELEASE DAY, REACH 2

Figure 1

FAX TRANSMITTAL # of pages ▶ 2

To PAT BRANDES From GARY STERN

Dept./Agency Phone #

Fax # I FAXED THIS TO GREG TODAY

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

11/10/94

To: Greg Gratrell

From: Gary Stern

Re: Draft report on technical disagreements

The following are a few comments that I would like you to consider.

Page 5. Use of QWEST to Limit Exports.
1st paragraph - I suggest this paragraph be reworded as follows:

> "The "QWEST" index has been historically used to estimate the "net reverse flow" in the lower San Joaquin River. QWEST is not measured, but calculated based of Delta inflows, exports, and cross Delta flow from the Sacramento River. Biological factors, such as salmon smolt survival, have shown a weak correlation with QWEST. As presently calculated QWEST does not include tidal factors, an incorrect assumption because tidal flows may be 100 times larger than QWEST levels. The QWEST calculation can be improved by incorporating tidal factors, so that actual Delta flows are more accurately described by the index.

DELETE THE LAST SENTENCE OF THE PARAGRAPH REGARDING TRANSPORT - DWR's particle transport model does support QWEST as a transport mechanism. There is fisheries field data that indicates flow does play a role in the transport of larval and juvenile fish in streams and estuaries, including the Sacramento-San Joaquin Delta.

2nd paragraph - I suggest you add the following to the first sentence:

> "because there is no biological basis for selection of the specific export/inflow ratios included in the Ag/Urban proposal."

"Note" in the 2nd paragraph:

The Club FED proposal is not anomalous regarding the cross-channel gate closures, because not all salmon that enter the Delta from November through April are <u>smolts</u>. We have established a set of protective measures for <u>rearing</u> winter-run chinook salmon during the period of November through January and another set of protective measures for outmigrating winter-run <u>smolts</u> from February through April. Winter-run juveniles arriving in the Delta during the period of November through January must continue to reside in freshwater until February or March. Thus, our protection measures for that period are: 1) provide periodic gate closures during periods of significant downstream fish movement (usually flow and turbidity events); 2)

maintain acceptable flow conditions in the central/western Delta for rearing juvenile salmon with a cap on QWEST (-2,000 cfs).

When these juveniles are ready to actively outmigrate as smolts during the period of February through April, there is a need for improving flow conditions in the central/western Delta to avoid entrainment at the pumps due to false attraction down Old and Middle rivers. This 2 level protection plan also allows for additional operational flexibility in the fall months because serious pumping constraints may occur with the creation of better flow conditions during the smolt outmigration in the spring months.

I suggest you eliminate the entire "note" to this paragraph, because smolt survival results do not apply to this rearing phase (November-January) for winter-run juveniles and the protection plan closes the cross-channel during the winter-run smolting period (February-April).

C) Specifics with respect to February.
I believe all the comments in this first paragraph would also apply to the Club FED proposal except our export limits are sometimes achieved through a QWEST criteria.

MEMORANDUM

Date: November 10, 1994

From: Michael Thabault

To: Greg Gartrell

Subject: Draft November 2, 1994 summary of October 24 meeting on disagreements

---

General Notes:

I believe the USFWS opinions regarding delta smelt have been grossly understated. In the last four meetings and in the October 24 meeting I have continually brought the benefits and historical background for the use of the San Joaquin River as part of outflow throughout the spring period. We have continued to discuss this on the phone with Cay Goude yet there is no mention of this here. We have continually commented on the overall management of water in the Export/Inflow ration and export 100% of Vernalis flow as an issue for central Delta hydrodynamics and effects on smelt yet this discussion is missing. I find the entire document focused on benefits to salmon, yet it is stated through out that the CUWA/Ag proposal is a multi species approach implying that the Federal proposal is still focused on a species by species approach. This in fact an inaccurate portrayal.

Specific Comments:

San Joaquin River flows:

The Federal agencies have continually brought up the fact that there are no identifiable goals that the CUWA/Ag proposal is trying to get to. This leads on to question how to identify success and how does one identify appropriate changes in actions if there are no target objectives.

The Club FED technical basis section does not have any discussion concerning the base flow period. The Service has in the past and continues to recommend that a San Joaquin component to outflow or X2 must be provided throughout the period. If we are to take a truly ecosystem approach then as water years improve one would expect greater contributions from the San Joaquin side of the system. These flows can provide suitable habitat conditions for the northern delta region, behavioral cues to direct fish in a particular direction, and also these components can help offset potential affects of the DCC closure for smelt and splittail. Additionally if 100% of Vernalis flow is allowed to be exported including all of the pulse flow the biological benefits of the are lost.

Export limits:

The February Technical basis for the disagreement again does not address shifts in migration for delta smelt, Sacramento splittail, or longfin smelt as

a result of a 65% of inflow that is exported. This comment also applies to the December to January period as well later in the document.

In the Club FED technical basis for disagreement section The Services position should be characterized as follows:

Although the biological correlations are weak between QWEST and salvage, there is never the less a correlation. Which component of the calculation is the actual mechanism for the correlation is not known nor is it relevant. It is a tool to provide management decisions. There has been no such analysis by the CUWA/Ag group on 1) whether any given Export/Inflow percentage is correlated at all to project effects 2) under the CUWA/Ag proposal there will be many times that the QWEST criteria currently in place will be exceeded under their proposal what makes the percentage relationship a biologically valid mechanism to manage exports. Additionally, the discussion focusses around salmon and it should be identified that the NMFS opinion provides the basis for delta smelt actions and was a pre-existing condition for the purposes of EPA's proposal. There are substantial benefits to delta smelt and likely longfin smelt in their behavior as adults during migration. Evidence of that was provided with substantially high salvage of adults in January 1993 before either the NMFS opinion or the USFWS opinion was in place.

Again the overall ecosystem management of both basins is lost with the CUWA/Ag proposal because of the disproportionate contribution to outflow in some years and the over reliance of San Joaquin flows to supply exports.

The March-June export limits technical basis I do not think is accurately portrayed. All of the above arguments apply throughout the spring period relative to estuarine fishes. The Service is very concerned over the entire application of an Export/Inflow relationship and this should be reflected. The same arguments apply to part of the July to January period specifically December and January.

Throughout the document a triggering mechanism to relax the standard is identified but no described. The Service is very concerned about using a negative finding as a trigger to allow a relaxation. Give the relative population sizes that we might be dealing with and the overall effectiveness of the sampling methodology this does not appear to be a reasonable short term-action. The Service does recognize the need to further refine the sampling techniques but believe it is premature to write such requirement into a standard.

X2 Standard:

The summary of the disagreement is not accurately portrayed. Although there was agreement that the two X2 proposals resulted in roughly equivalent water costs the issues of 1) where the water comes from 2) for what years does one write the standards to cover and 3) the starting gate concept. Although EPA agrees in concept with the X2 requirements I must reiterate again that San Joaquin contributions are an integral part of the Services interpretation of that requirement. The standard in the CUWA/Ag proposal appears to be written to automatically cover outlying years i.e. very dry. The Service believes that the standards should be written to cover the vast majority of the years and then identify specifically those years that are going to be problem years

and address them separately. For instance if, based on the recent historical record, one would expect to get chips island flows through May the standard should reflect that not a minimal outflow such as 6,000 cfs, which may not provide the necessary habitat or behavioral ques, currently required in the CUWA/Ag proposal.

Appendix 1:

3rd Paragraph under San Joaquin Spring flows:

The Service has never stipulated that the San Joaquin flows identified in the CUWA/Ag proposal are a <u>significant</u> improvement. There is some improvement in most years.

Lost correspondence
He made changes
he paid via phone call
Fri = 13th

Greg A few changes

Page 2, 4th paragraph:

"Another difference that arose concerned the Club FED smolt survival goals and their relationship to the CVPIA fish doubling requirements. While it was indicated that Club FED's proposal is intended to be consistent with the CVPIA goals, the goals themselves are designed independently of the CVPIA, to protect the fish migration beneficial use in the Bay/Delta Estuary. The Ag/Urban group does not ....."

paragraph above that should be "best possible chance OF SURVIVING their passage during the limited pulse flow period.

Page 4, 2nd paragraph:

Although survival, as measured by the San Joaquin smolt survival model, is estimated to be greater than historic conditions in dry years with the Ag/Urban proposal, it DOES NOT INCREASE THE HISTORICAL average of 0.17 (1965 to 1989)(SEE TABLE 1). THE LEVEL OF PROTECTION offered in the Ag/Urban proposal in inadequate, because it is not an IMPROVEMENT over historical conditions.

4th paragraph after "possible conditions" add "for San Joaquin smolts"

Page 8, "In attatchment 1, several tables and graphs are shown comparing historical export/inflow levels, to proposed Ag/CUWA export/inflow levels, to support the statement that there is "an overall decrease in pumping in drier years due to the proposed limits". Club FED believes this is not the correct data to compare, to evaluate the statement, because the graphs representing the new levels do not incorporate proper base. A DWRSIM operations model with the Ag/CUWA criteria incorporated should be used to compare to historical values. The DWRSIM model takes....." rest of paragraph is fine.

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, Governor

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

NOV 10 1994

Mr. Jim Lecky
Southwest Region
National Marine Fisheries Services
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213

Dear Mr. Lecky:

This letter conveys some of my thoughts regarding the existing winter-run biological opinion and what I believe we have learned about some of the key components of the opinion and incidental take statement. Hopefully what we have learned can be used in our deliberations which may lead to a revised opinion and take statement.

First, it is clear that the classification system now being used to sort the juvenile salmon by race is not working well enough to reliably estimate winter-run take at the Delta pumps. The DNA process for identifying salmon races, even if it works, is probably a few years away.

Second, calculating the number of winter-run smolts entering the Delta is based on a series of assumptions and estimates which likely vary from year to year but which are not verified. For example, this year there appears to be several times more juveniles upriver than there were last year in spite of this year's much lower estimated adult population (189 vs 341).

Third, is the concern about the 1 percent limit itself. It wasn't clear in the 1993 opinion how this limit was derived and how it relates to non-jeopardy. For what it is worth, in 1993 and 1994, we seem to have remained below the 1 percent take limit, albeit not without some water costs.

The above leads me to conclude that definitive take limits in the Delta are not an appropriate component of the incidental take statement. Given the uncertainty in all the calculations a more general take statement with a range of incidental take, say from 1 to 5 percent, is more technically defensible.

We also need to know more about the role of the Delta in controlling winter-run abundance. Our 1992 biological assessment contained analyses which did not demonstrate a relationship between such Delta conditions as flow, pumping and Qwest and subsequent adult returns from a given escapement. We are

updating these analyses to determine if including a few more year classes change this conclusion. We have to be careful using simple statistical relations between pumping and abundance because changes of both variables are linked to time.

All things considered, I see no justification making future reasonable prudent alternatives more stringent then those in the 1993 opinion. In fact, there is enough evidence as cited above to allow you to relax the RPA's.

One last comment relates to the recovery plan. It has been several years since USFWS and DFG staff began preparing the plan. For some unknown reason, drafting the plan has been a secretive process, although I understand that the recovery team has recently made considerable progress. In the spirit of the new CAL/FED process, we would appreciate reviewing a draft as soon as possible. Are you proposing to release the final plan on December 15?

I hope the above information clarifies my views on some important issues. I would appreciate it if you would make this letter part of your administrated record. If you have any questions, please call me at (916) 653-6055.

Sincerely,

ORIGINAL SIGNED BY
ROBERT G. POTTER

Robert G. Potter
Chief Deputy Director

cc: (See attached list.)

David N. Kennedy
Director
Department of Water Resources
1416 Ninth Street, Room 1115-1
Sacramento, California 95814

Mr. Gary Stern
National Marine Fisheries Service
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

Mr. Dan Fults
U.S. Department of Interior
Bureau of Reclamation
2800 Cottage Way
Sacramento, California 95825

Mr. Patrick Wright
Water Management Division
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, California 94105

Mr. Wayne White
U.S. Fish and Wildlife Service
2800 Cottage Way, Room E-1803
Sacramento, California 95825-1846